

AMENDMENTS TO THE CLAIMS

Please cancel claims 4, 8, 10-13, 17, 19-20 and 30, amend claims 1, 21, 24, 28-30, 32 and 33, and add new claim 34. No new matter is believed to be introduced as a result of the aforementioned amendments and new claim. The following listing of claims replaces all prior versions and listings of claims in this application.

1. **(Currently amended)** A vertical cavity surface emitting laser (VCSEL), comprising:
 an active region further comprising at least one quantum well ~~having a well depth of at least 40 meV and comprised of~~ comprising InGaAsN and including barrier layers sandwiching said at least one quantum well, the barrier layers including nitrogen; and
 confinement layers sandwiching said active region, wherein the barrier layers and/or the confinement layers are comprised of [[a]] material that reduces a level of non-confining valence band discontinuity in the quantum well due to the presence of nitrogen in the quantum well.
2. **(Previously Presented)** The VCSEL of claim 1 wherein said barrier layers are comprised of GaAsN.
3. **(Original)** The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs.
4. **(Cancelled)**
5. **(Previously Presented)** The VCSEL of claim 1 wherein said at least one quantum well further comprises >1% N.
6. **(Previously Presented)** The VCSEL of claim 1 wherein said at least one quantum well is up to and including 50Å in thickness.
7. **(Previously Presented)** The VCSEL of claim 5 wherein said at least one quantum well is up to and including 50Å in thickness.

8. (Cancelled)

9. (Original) The VCSEL of claim 5 wherein said confinement layers are comprised of AlGaAs.

10. - 13. (Cancelled)

14. (Original) The VCSEL of claim 1 wherein said at least one quantum well is further comprised of Sb.

15. (Previously Presented) The VCSEL of claim 14 wherein said barrier layers are comprised of GaAsN.

16. (Original) The VCSEL of claim 14 wherein said confinement layers are comprised of AlGaAs.

17. (Cancelled)

18. (Original) The VCSEL of claim 15 wherein said confinement layers are comprised of AlGaAs.

19. - 20. (Cancelled)

21. (Currently amended) A vertical cavity surface emitting laser (VCSEL) comprising:

an active region further comprising at least one quantum well ~~having a well depth of at least 40 meV and~~ comprised of InGaAsN and including AlGaAs barrier layers sandwiching said at least one quantum well; and

confinement layers sandwiching said active region.

22. **(Original)** The VCSEL of claim 19 wherein said confinement layers are comprised of AlGaAs.

23. **(Previously Presented)** The VCSEL of claim 21 wherein said at least one quantum well is up to and including 50Å in thickness.

24. **(Currently amended)** A vertical cavity surface emitting laser (VCSEL) comprising:
an active region further comprising at least one quantum well ~~having a well depth of at least 40 meV and~~ comprised of InGaAsN and including barrier layers sandwiching said at least one quantum well; and
AlGaAs confinement layers sandwiching said active regions.

25. **(Original)** The VCSEL of claim 24 wherein said barrier layers are comprised of AlGaAs.

26. **(Original)** The VCSEL of claim 24 wherein said barrier layers are comprised of InGaAsN.

27. **(Previously Presented)** The VCSEL of claim 24 wherein said at least one quantum well is up to and including 50Å in thickness.

28. **(Currently amended)** A vertical cavity surface emitting laser (VCSEL), comprising:
an active region further comprising at least one quantum well ~~having a well depth of at least 40 meV and~~ comprised of InGaAsN and including AlGaAs barrier layers sandwiching said at least one quantum well; and
AlGaAs confinement layers sandwiching said active region.

29. **(Currently amended)** A vertical cavity surface emitting laser (VCSEL), comprising:

an active region further comprising at least one quantum well ~~having a well depth of at least 40 meV and~~ comprised of InGaAsN and including InGaAs barrier layers sandwiching said at least one quantum well; and

AlGaAs confinement layers sandwiching said active region.

30. **(Currently amended)** A vertical cavity surface emitting laser (VCSEL), comprising:
an active region further comprising at least one quantum well ~~having a well depth of at least 40 meV and~~ comprised of InGaAsN and including GaAsN barrier layers sandwiching said at least one quantum well; and

GaAsN confinement layers sandwiching said active region.

31. **(Cancelled).**

32. **(Currently amended)** A vertical cavity surface emitting laser (VCSEL), comprising:
an active region further comprising at least one quantum well having a well depth of at least 40 meV and comprised of InGaAsN[[:]] and including GaAsN barrier layers sandwiching said at least one quantum well; and

AlGaAs confinement layers sandwiching said active region.

33. **(Currently amended)** A vertical cavity surface emitting laser (VCSEL), comprising:
an active region further comprising at least one quantum well ~~having a well depth of at least 40 meV and~~ comprised of InGaAsN[[:]] and including AlGaAs barrier layers sandwiching said at least one quantum well; and

GaAsN confinement layers sandwiching said active region.

34. **(New)** A vertical cavity surface emitting laser (VCSEL), comprising:
an active region further comprising at least one quantum well and including barrier layers sandwiching said at least one quantum well, at least one of the quantum well and the barrier layers including nitrogen;

upper and lower confinement layers sandwiching said active region, wherein the barrier layers and/or the upper and lower confinement layers are comprised of material that reduces a level of non-confining valence band discontinuity in the quantum well due to the presence of nitrogen in the quantum well; and

a flattening layer interposed between the lower confinement layer and the at least one quantum well.